



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1470  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/487,969	01/18/2000	Maria Clemens Y. Quinones	18865-35US	3787

20350 7590 10/07/2003

TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

CHAMBLISS, ALONZO

ART UNIT PAPER NUMBER

2827

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary****Application No.**

09/487,969

**Applicant(s)**

QUINONES ET AL.

**Examiner**

Alonzo Chambliss

**Art Unit**

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/22/03 in Paper No. 9 has been entered.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 7-30 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 7, 8, 10, 12-16, 18, 20-24, 26, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bencuya et al. (U.S. 6,423,623) in view of Kozono (U.S. 5,420,459).

With respect to Claims 7, 15, and 23, Bencuya discloses a bottom lead frame 200 and a top lead frame 206, 208. Fig. A bumped die 202 (i.e. MOSFET that includes a source and gate region) includes a source and gate solder bump array that is attached the bottom lead frame 200, since these bumps are attached to a gate lead and source metal (see col. 2 lines 40-65; Figs. 2-4). The top lead frame is flipped such that each top lead frame contacts the solder bumps on a corresponding bumped die 202. The bumped die 202 is between each the top lead frame 206, 208 and corresponding bottom lead frame 200 (see Figs. 2-4). Bencuya fails to explicitly disclose a plurality of bottom lead frames coupled to one another with a pair of rails and a plurality of top lead frames coupled to one another with a pair of rails. However, it is well known that before the package is separated in to product shown in Fig. 3 of Bencuya. A plurality of bottom lead frames are coupled to one another with a pair of rails and a plurality of top lead frames are coupled to one another with a pair of rails as evident by Kozono. Therefore, it would have been obvious to incorporate a plurality of bottom lead frames attached to a plurality of top lead frames, wherein a chip is between

the top and bottom lead frames, since the plurality of top and bottom lead frames would allow plurality of devices to be manufactured simultaneous as taught by Kozono.

With respect to Claims 8, 16, and 24, Bencuya discloses a molded body 300 is placed around each top and bottom lead frame 206, 208, 300 with a corresponding bumped die 202 between them (see Fig. 3).

With respect to Claims 10, 12, 18, 20, 26, and 28, Bencuya discloses reflowing the solder bumps 204 (see col. 3 lines 39-50).

With respect to Claims 13, 14, 21, 22, 29, and 30, Bencuya discloses wherein the bumped die 202 is attached to the bottom lead frame 200 with an adhesive (i.e. conductive epoxy or solder connection in a soft state), wherein the adhesive is cured sometime during the method after the die is attached thereto (see col. 2 lines 43-48), since solder connection can be cured when the solder balls 204 are cured.

5. Claims 9, 11, 17, 19, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bencuya et al. (U.S. 6,423,623) and Kozono (U.S. 5,420,459) as applied to claims 7,15, and 23 above, and further in view of Ishibashi (U.S. 5,394,751).

With respect to Claims 9, 11, 17, 19, 25, and 27, Bencuya-Kozono both fail to disclose spot welding to create a press-fit between the rail of the bottom lead frame and a rail of the top lead frame together. However, Ishibashi discloses spot welding to create a press-fit between the rail of the bottom lead frame and a rail of the top lead frame together (see col. 4 lines 10- 15). Therefore, it would have been obvious to incorporate the spot welding technique with process of Bencuya-Kozono, since the spot welding

technique would increase the rigidity of the die pad portion of the lead frame as taught by Ishibashi.

6. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bencuya et al. (U.S. 6,423,623) and Kozono (U.S. 5,420,459) as applied to claims 7, 15, and 23 above, and further in view of Watanabe (U.S. 5,365,106).

With respect to Claims 31-33, it is well known when having a pair of rails coupling the bottom lead frames include aligners (i.e. positioning holes) and the pair of rails coupling the top lead frames include corresponding holes, and wherein when the top lead frames are flipped onto the bottom lead frames, the aligners and holes are used to ensure proper alignment as evident by Watanabe (see col. 2 lines 65-68 and col. 3 lines 1-4; Fig. 3). Therefore, it would have been obvious to incorporate aligners on bottom lead frames and top lead frames with corresponding holes with the process of Bencuya-Kozono, since the aligners and corresponding holes would improve the alignment when the top lead frame is attached to the bottom lead frame as taught by Watanabe.

The prior art made of record and not relied upon is cited primarily to show the process of the instant invention.

### ***Conclusion***

7. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Application/Control Number: 09/487,969

Page 6

Art Unit: 2827

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

AC/September 24, 2003



Alonzo Chambliss  
Patent Examiner  
Art Unit 2827